OCCUPATIONAL ANALYSES SERIES

Glazier

2004

Human Resources and Skills Development Canada
Ressources humaines et Développement des compétences Canada

Canada

LM-339-07-04E

Occupational Analysis Series

Glazier

2004

Trades and Apprenticeship Division

Human Resources
Partnerships Directorate

Division des métiers et de l'apprentissage

Direction des partenariats
en ressources humaines

Disponible en français sous le titre : Vitrier/vitrière

© Her Majesty the Queen in Right of Canada 2004
Cat. No. HS3-3/41-2004E
ISBN: 0-662-37780-X

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this occupational analysis as the national standard for the occupation of glazier.

105-00182/

ACKNOWLEDGEMENTS

Human Resources and Skills Development Canada (HRSDC) wishes to express sincere appreciation for the contribution of the many industrial establishments, professional associations, labour organizations, tradespeople, provincial and territorial government departments and agencies, and all others who contributed, directly or indirectly, to this publication.

Special acknowledgement is extended to Chris Chinien, France Boutin and Janice Liwanag of Manitoba, who updated this analysis with the assistance of the following representatives from the glazing industry:

Ronald C. Bullman	Nova Scotia
Patrick B. Byrne	British Columbia
Marvin Loff	Saskatchewan
Harry J. Lush	Ontario
Rick Makepeace	Alberta
Guy Martin	Quebec
Rod O'Connor	Prince Edward Island
Bryan Rendell	Northwest Territories
Nick Stratis	Yukon

This analysis was prepared by the Human Resources Partnerships Directorate of HRSDC. The planning, co-ordination and processing of the analysis were undertaken by staff members of the Trades and Apprenticeship Division of HRSDC.

OTHER RELATED OCCUPATIONAL TITLES

This analysis covers tasks performed by a glazier whose occupational title has been identified by some provinces and territories of Canada under the following names:

- Erector Mechanic (Glazier)
- Glassworker
- Glazier and Metal Mechanic

LIST OF PUBLISHED OCCUPATIONAL ANALYSES*

TITLE	NOC** Code
Appliance Service Technician (1997)	7332
Aquaculture Technician (1977)	2221
Arts Administrator (1989)	0114
Automotive Painter (1995)	7322
Automotive Service Technician (1998)	7321
Automotive Technician - Automatic Transmission (1990)	7321
Automotive Technician - Electrical/Electronics (1992)	7321
Automotive Technician - Engine Repair and Fuel Systems (1989)	7321
Automotive Technician - Front-End (1989)	7321
Automotive Technician - Manual Transmission, Driveline and Brakes (1990)	7321
Aviation Machinist (1994)	7231
Baker (1997)	6252
Blaster (Surface) (1987)	7372
Boilermaker (2003)	7262
Bricklayer (2000)	7281
Cabinetmaker (2000)	7272
Carpenter (1998)	7271
Cement Finisher (1995)	7282
Construction Electrician (2003)	7241
Cook (2003)	6242
Electrical Rewind Mechanic (1999)	7333
Electronics Technician - Consumer Products (1997)	2242
Electronics Technician Vol. I (1986) (Video Equipment)	2242
Electronics Technician Vol. II (1986) (Audio Equipment)	2242

* **Red Seal analyses are indicated in bold**

** **National Occupational Classification**

Electronics Technician Vol. III (1986) (Computer Equipment)	2242
Electronics Technician Vol. IV (1986) (Office Equipment)	2242
Electronics Technician Vol. VI (1986) (Communication Equipment)	2242
Electronics Technician Vol. VII (1986) (Signaling Equipment)	2242
Electronics Technician Vol. VIII (1986) (Navigation Equipment)	2242
Electronics Technician Vol. IX (1986) (Video Game Equipment)	2242
Electronics Technician Vol. X (1987) (CADD Equipment)	2242
Electronics Technician Vol. XI (1987) (CAM Equipment)	2242
Electronics Technician Vol. XII (1987) (Robotics Equipment)	2242
Electronics Technician Vol. XIII (1987) (Biomedical and Laboratory Equipment)	2242
Electronics Technician Vol. XIV (1987) (Industrial Process-Control Equipment)	2243
Farm Equipment Mechanic (2000)	7312
Floorcovering Installer (1997)	7295
Glazier (2004)	7292
Hairstylist (1997)	6271
Heating (Gas and Oil) Servicer - Commercial and Industrial (1978)	7331
Heavy Duty Equipment Mechanic (1998)	7312
Industrial Electrician (2003)	7242
Industrial Instrument Mechanic (2000)	2243
Industrial Mechanic (Millwright) (1999)	7311
Insulator (Heat and Frost) (2000)	7293
Ironworker (Generalist) (1993)	7264
Lather (Interior Systems Mechanic) (2002)	7284
Logistics (1992)	0713

Machinist (1998)	7231
Major Electrical Appliance Repairer (1984)	7332
Metal Fabricator (Fitter) (2003)	7263
Mobile Crane Operator (1997)	7371
Motorcycle Mechanic (1995)	7334
Motor Vehicle Body Repairer (Metal and Paint) (1997)	7322
New Home Builder and Residential Renovation Contractor (1992)	0712
Oil Burner Mechanic (1997)	7331
Painter and Decorator (2000)	7294
Partsperson (1995)	1472
Plumber (2003)	7251
Power Engineer (1997)	7351
Powerline Technician (2004)	7244
Recreation Vehicle Service Technician (2000)	7383
Refrigeration and Air Conditioning Mechanic (1997)	7313
Roofer (1997)	7291
Sheet Metal Worker (1997)	7261
Sprinkler System Installer (2003)	7252
Steamfitter-Pipefitter (1996)	7252
Tilesetter (2004)	7283
Tool and Die Maker (1997)	7232
Truck-Trailer Repairer (2003)	7321
Truck and Transport Mechanic (2000)	7321
Welder (2004)	7265

REQUESTS FOR THESE PUBLICATIONS SHOULD BE FORWARDED TO:

Trades and Apprenticeship Division
Human Resources Partnerships
Human Resources and Skills Development Canada
Place du Portage, Phase IV, 5th Floor
Gatineau, Quebec K1A 0J9

FOREWORD

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to co-operate with provincial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Human Resources and Skills Development Canada sponsors a program, under the guidance of the Canadian Council of Directors of Apprenticeship (CCDA), to develop a series of occupational analyses.

The Occupational Analysis Program has the following objectives:

- to identify and group the tasks performed by skilled workers in particular occupations;
- to identify those tasks that are performed by skilled workers in every province and territory;
- to develop instruments for use in the preparation of interprovincial standards "Red Seal" examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility, in Canada, of trainees and skilled workers; and
- to supply employers and employees, and their associations, industries, training institutions and governments with analyses of the tasks performed in particular occupations.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	i
OTHER RELATED OCCUPATIONAL TITLES	ii
LIST OF PUBLISHED OCCUPATIONAL ANALYSES	iii
FOREWORD	vii

GUIDE TO ANALYSIS

DEVELOPMENT OF ANALYSIS	xiii
STRUCTURE OF ANALYSIS	xiii
VALIDATION METHOD	xiv
SCOPE OF THE GLAZIER OCCUPATION	xvi
OCCUPATIONAL OBSERVATIONS	xvii
SAFETY	xviii

ANALYSIS

BLOCK A	**COMMON OCCUPATIONAL SKILLS**		
	Task 1	Plans work activities.	3
	Task 2	Prepares site for installation.	6
	Task 3	Handles glass and other materials.	8
	Task 4	Prepares materials for installation.	11
	Task 5	Uses and maintains equipment.	13
	Task 6	Uses and maintains hand and power tools.	14
BLOCK B	**COMMERCIAL DOOR AND WINDOW SYSTEMS**		
	Task 7	Fabricates structural systems.	16
	Task 8	Installs structural systems.	19

BLOCK C **RESIDENTIAL DOOR AND WINDOW SYSTEMS**

Task 9 Installs doors. 23

Task 10 Installs windows. 25

BLOCK D **SERVICE**

Task 11 Services commercial door systems, window systems, and specialty products. 28

Task 12 Services residential door systems, window systems, and specialty products. 30

BLOCK E **SPECIALTY PRODUCTS**

Task 13 Installs specialty products. 33

Task 14 Installs automotive glass. 35

APPENDICES

Appendix "A" Tools and Equipment 41

Appendix "B" Glossary 45

Appendix "C" Blocks and Tasks Weighting 49

Appendix "D" Pie Chart 53

Appendix "E" Task Profile Chart 55

GUIDE TO ANALYSIS

DEVELOPMENT OF ANALYSIS

A draft analysis is developed by a knowledgeable consultant who, with the assistance of a committee of industry experts in the field, identifies all the tasks performed in the occupation.

The draft is then assigned to occupational analysts at Human Resources and Skills Development Canada for translation and then returned to the consultant for review to ensure conformity with the nationally approved format.

The consultant will then forward a copy of this analysis to provincial/territorial authorities for validation by specialists in the field. Their recommendations are assessed and incorporated into the final draft which also includes the identification of the common core tasks performed in the occupation.

The occupational analysis is published in both official languages.

STRUCTURE OF ANALYSIS

To facilitate understanding of the nature of the occupation, the work performed is divided into the following divisions:

A. **BLOCK** – is the largest division within the analysis and reflects a distinct operation relevant to the occupation.

B. **TASK** – is the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform to complete a specific assignment within a "BLOCK".

C. **SUB-TASK** – is the smallest division into which it is practical to subdivide any work activity and, combined with others, fully describes all duties constituting a "TASK".

Supporting Knowledge & Abilities

The elements of skill and knowledge that an individual must acquire to adequately perform the task are identified under this heading.

Trends

Any shifts or changes in technology that affect the block are identified under this heading.

Related Components

All components of a specified task being undertaken by the glazier are identified under this heading.

Tools and Equipment

All tools and equipment necessary for the glazier to complete a task are identified under this heading.

VALIDATION METHOD

At the request of the Canadian Council of Directors of Apprenticeship (CCDA), the Standardization Sub-committee developed a method for validating the Red Seal national occupational analyses.

A draft of the analysis is sent to all provinces/territories for validation. Each jurisdiction rates the sub-tasks and applies percentage ratings to blocks and tasks. This method for the validation of the national occupational analysis identifies common core tasks across Canada for a specific occupation. This feature facilitates the weighting of the Interprovincial Red Seal examinations.

DEFINITIONS

YES: the sub-task is performed by workers in the occupation in a specific jurisdiction.

NO: the sub-task is not performed by workers in the occupation in a specific jurisdiction.

BLOCK %: the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, that will be placed on an interprovincial examination to assess each block of the analysis.

TASK %: the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, that will be placed on an interprovincial examination to assess each task of the analysis.

NV: Not Validated by a province/territory.

ND: Not Designated in a province/territory.

PROVINCIAL/TERRITORIAL ABBREVIATIONS

NL: Newfoundland and Labrador
NS: Nova Scotia
PE: Prince Edward Island
NB: New Brunswick
QC: Quebec
ON: Ontario
MB: Manitoba
SK: Saskatchewan
AB: Alberta
BC: British Columbia
NT: Northwest Territories
YK: Yukon
NU: Nunavut

COMMON CORE

The criteria for determining common core depend on the performance of sub-tasks. If 70% of the responding jurisdictions (excluding NVs and NDs) perform a sub-task, it shall be considered common core.

Interprovincial Red Seal examinations are based on the common core identified through this validation process. This process identifies what will be assessed through the interprovincial examination.

BLOCKS AND TASKS WEIGHTING (APPENDIX "C")

This appendix represents the block and task percentages as submitted by each jurisdiction.

Each jurisdiction, with the use of a provincial/territorial occupational advisory committee, validates the content, places percentages on blocks and tasks, and indicates whether or not the sub-tasks are performed by the skilled workers within the occupation. The results of this exercise are submitted to the consultant who then analyzes the data and develops this appendix which provides the individual jurisdictional validation results as well as the national averages of all responses.

PIE CHART (APPENDIX "D")

The graph depicts the national percentages assigned to blocks in the analysis.

SCOPE OF THE GLAZIER OCCUPATION

The term "glazier" defines a person having the knowledge, training, and abilities to prepare, install, replace, and service glass and related components and products in residential, commercial, and industrial applications. A glazier may perform these job duties on buildings and other structures and on vehicles, furniture, and other products. Glaziers may be employed by construction glass installation contractors, retail service, repair shops and glass fabrication shops.

The glazier has the abilities, knowledge, and skills to perform all or some of the following duties: 1) handling, cutting, shaping, preparing, and fabricating glass to specifications; 2) fabricating, preparing, laying out, and installing support structures, flashings, sealants, and membranes for window installation; 3) installing glass and glass products on walls, ceilings, and other support structures; 4) installing and servicing glass, doors, windows, and associated hardware; 5) fabricating, installing, and servicing specialty products; 6) replacing tempered glass, windshields, and associated hardware on vehicles; and 7) servicing and maintaining door and window systems in existing facilities. Some glaziers may specialize in one or more of the above-named duties.

To perform their job duties effectively and efficiently, glaziers should know all applicable codes and regulations. They must have the ability to properly operate hand and power tools, specialty layout tools, and related equipment. The occupation of glazier involves a considerable amount of physical work. Glaziers routinely need to climb ladders, work from scaffolds, use self-propelled elevated work platforms, as well as load and drive trucks. In spite of considerable requirements for lifting and carrying heavy loads, only average strength is required since these tasks are usually performed by a team. Glaziers must also have the knowledge and skills to determine the appropriate and safest means of performing their tasks, since they face the danger of exposure to toxic substances, cuts from glass and injury from lifting and falls.

A glazier interacts with co-workers, clients, tradespeople and other professionals, which requires good interpersonal skills and the ability to effectively communicate in both oral and written forms.

OCCUPATIONAL OBSERVATIONS

Some significant observations and trends emerged from the national occupational analysis of the glazier's occupation. These observations and trends are briefly outlined in this section.

Glaziers may be required to perform both shop and site duties. Some duties of the glazing occupation, such as installation of automotive glass and installation of glass in recreational facilities, are becoming specialty areas.

The increasing use of prefabricated windows, glass doors, and curtain walls has altered the job tasks of glaziers. Improvements in the thermal capacity of modern glass and the demand for more vision result in larger modules that are heavier, which requires increased knowledge of hoisting and rigging. The increased use of self-propelled elevated work platforms requires knowledge about them and their proper operating techniques. There is a trend towards introducing mandatory certification for operating such equipment.

As the trade becomes more sophisticated and customers develop higher expectations for services, sound employability skills are becoming increasingly more important to glaziers. These essential employability skills include: learning how to learn, computation, writing, reading, communication, listening, problem solving, creative thinking, and interpersonal skills.

There is a general concern regarding the decline in the number of apprentices entering the occupation. This problem is not particular to glaziers, but has rather reached a crisis state in many other apprenticeable trades due to the overemphasis currently being placed on academics and white-collar occupations. The workforce in the glazing industry consists of an aging population. The age gap between experienced glaziers and apprentices is increasing. As experienced glaziers retire, there are fewer qualified individuals to train new apprentices.

The introduction of tuition fees for the institutionalized training component of apprenticeship has resulted in declining enrolment and undue economic hardship for apprentices. New initiatives are required to revitalize apprenticeship and attract new apprentices to the occupation, including those from non-traditional groups.

There is a need for standardization and certification in the trade. More attention should be paid to programs such as the Red Seal.

SAFETY

Safe working procedures and conditions, accident prevention and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to accidents or injury.

It is generally recognized that safety-conscious attitudes and work practices contribute to a healthy, safe and accident-free working environment.

It is imperative to apply and be familiar with the *Occupational Health and Safety Act* and Workplace Hazardous Material Information System (WHMIS) Regulations. As well, it is essential to determine workplace hazards and take measures to protect oneself, co-workers, the public, and the environment.

As safety education is an integral part of training in all jurisdictions, personal safety practices are not recorded in this document. However, the technical safety aspect relating to each task and sub-task are included throughout this analysis.

ANALYSIS

BLOCK A

COMMON OCCUPATIONAL SKILLS

Trends: *Toward preglazing to reduce cost. New sealants and adhesives facilitate the use of preglazing, resulting in cost savings. Because work is performed in a more controlled environment, there is a more consistent product and better quality control. Improvements in the thermal capacity of modern glass and the demand for more vision result in larger modules that are heavier, which requires increased hoisting and rigging. In some jurisdictions, the installation of engineered scaffolding is being contracted out to specialists. Because of globalization, glaziers must familiarize themselves with a variety of new systems, products, equipment, and techniques from other countries, which in turn affects scheduling. There is increased attention paid to safety, having direct implications on costs and installation time.*

Task 1 **Plans work activities.**

Related Components: Architectural prints, specifications, revisions and addenda, shop drawings, route sheets, contract schedules, delivery schedules, code books, workers' safety regulations, material safety data sheets (MSDS), technical manuals, permits.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

1.01 **Interprets drawings and specifications.**

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

1.01.01 knowledge of applicable codes and regulations

1.01.02 knowledge of contract documents (engineering drawings, consultant document, agreements, specifications and addenda)

1.01.03 knowledge of metric and imperial measurements

1.01.04 ability to read and interpret contract documents, tenders, drawings, specifications and addenda

Supporting Knowledge & Abilities

1.01.05 ability to determine scope of work from drawings and specifications

1.01.06 ability to create freehand sketches, complete with dimensions

Sub-task

1.02 Conducts site assessment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

1.02.01 knowledge of access requirements

1.02.02 knowledge of service requirements

1.02.03 knowledge of storage requirements

1.02.04 ability to determine scaffolding and hoisting requirements

1.02.05 ability to determine proper access to job site and storage requirements

1.02.06 ability to determine the need for personal protection equipment

1.02.07 ability to determine the need for public safety

1.02.08 ability to communicate with job supervisors and other tradespeople

1.02.09 ability to determine the need for special tools and equipment

1.02.10 ability to assess site readiness for installation

Sub-task

1.03 Prepares list of materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

1.03.01 knowledge of various types of glazing systems, materials, components, and parts

Supporting Knowledge & Abilities

1.03.02 knowledge of codes and regulations

1.03.03 ability to determine material requirements

Sub-task

1.04 Schedules equipment and materials.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

1.04.01 knowledge of common types of materials, finishes, and equipment used in the trade

1.04.02 ability to order materials and equipment

1.04.03 ability to schedule the delivery of materials and equipment

1.04.04 ability to coordinate off-loading

1.04.05 ability to take inventory of materials and equipment

1.04.06 ability to properly store materials and equipment

Sub-task

1.05 Plans work process.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

1.05.01 knowledge of applicable regulations, standards and codes

1.05.02 knowledge of various types of glass work for residential, commercial, and industrial applications

1.05.03 knowledge of job schedules

1.05.04 ability to plan work activities to ensure a safe and logical sequence of operations

Supporting Knowledge & Abilities

1.05.05	ability to verify elevation and locations
1.05.06	ability to select appropriate storage area
1.05.07	ability to communicate and schedule with all trade-related persons involved
1.05.08	ability to schedule and coordinate site work

Task 2 **Prepares site for installation.**

Related Components: Workers' safety regulations, architectural drawings, shop drawings, site orientation, job shacks, material shacks, A-frames, tarps, codes, Workplace Hazardous Material Information System (WHMIS).

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

2.01 **Makes provision for the storage of materials, tools, and equipment.**

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

2.01.01	knowledge of lifting capacity of shop or job site equipment
2.01.02	knowledge of site storage requirements to protect materials from damage and theft
2.01.03	ability to set up temporary storage facilities

Sub-task

2.02 **Installs scaffolding equipment.**

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

2.02.01	knowledge of applicable codes and regulations, restrictions, and engineered systems

Supporting Knowledge & Abilities

2.02.02	knowledge of scaffolding equipment
2.02.03	knowledge of installation procedures
2.02.04	ability to select related equipment
2.02.05	ability to follow manufacturers' instructions to install and dismantle scaffolding

Sub-task

2.03 Installs rigging equipment.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	no	NV

2.03.01	knowledge of applicable codes and regulations, restrictions, and engineered systems
2.03.02	knowledge of rigging equipment
2.03.03	knowledge of installation procedures
2.03.04	ability to select related equipment
2.03.05	ability to follow manufacturers' instructions to install and dismantle rigging equipment

Sub-task

2.04 Installs hoisting equipment.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	no	NV

2.04.01	knowledge of applicable codes and regulations, restrictions, and engineered systems
2.04.02	knowledge of hoisting equipment
2.04.03	knowledge of installation procedures
2.04.04	ability to select related equipment

Supporting Knowledge & Abilities

2.04.05 ability to follow manufacturers' instructions to install and dismantle hoisting equipment

Sub-task

2.05 Installs mechanical lifts and work platforms.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	no	NV

2.05.01 knowledge of applicable codes and regulations, restrictions, and engineered systems

2.05.02 knowledge of mechanical lifts and work platforms

2.05.03 knowledge of installation procedures

2.05.04 ability to select related equipment

2.05.05 ability to follow manufacturers' instructions to install and dismantle mechanical lifts and work platform

Task 3 Handles glass and other materials.

Related Components: Permits, safety regulations, material safety data sheets (MSDS), schedules, route sheets.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

3.01 Transports glass and other materials.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

3.01.01 knowledge of shipping and receiving documents

Supporting Knowledge & Abilities

3.01.02	knowledge of proper handling, transportation, and storage of glass and materials
3.01.03	knowledge of correct bracing and tie-down procedures
3.01.04	ability to use lifting devices
3.01.05	ability to determine accessibility to job site
3.01.06	ability to crate and uncrate glass
3.01.07	ability to safely secure glass and materials to transport vehicle
3.01.08	ability to transport crated glass products
3.01.09	ability to transport uncrated glass products

Sub-task

3.02 Receives glass and other materials.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

3.02.01	knowledge of proper handling and storage of glass and materials
3.02.02	knowledge of warehousing practices
3.02.03	ability to unload glass and materials
3.02.04	ability to inspect glass and materials for defects and damage
3.02.05	ability to complete documentation

Sub-task

3.03 Rigs and hoists glass and other materials.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

3.03.01	knowledge of rigging and hoisting equipment
3.03.02	knowledge of rigging techniques for glass and systems
3.03.03	ability to select and use proper hoisting equipment according to types of load being lifted
3.03.04	ability to use rigging equipment

Sub-task

3.04 Stores glass and other materials.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

3.04.01	knowledge of correct bracing procedures
3.04.02	knowledge of potential damage from weather elements
3.04.03	knowledge of proper procedures for protecting glass and materials on job site
3.04.04	ability to assess load-bearing capacity
3.04.05	ability to store glass and materials in safe areas on job site to avoid unnecessary damage

Sub-task

3.05 Installs glass and other materials.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

3.05.01	knowledge of installation procedures for various glazing systems

Supporting Knowledge & Abilities

3.05.02	knowledge of different types of flashings
3.05.03	ability to carry out installation procedures for various glazing systems
3.05.04	ability to install flashings

Task 4 **Prepares materials for installation.**

Related Components: Shop drawings, cutting sheets, material safety data sheets (MSDS), specifications, isolation coating, inventory, route sheets, safety regulations, shipping bills, sloped-glazing systems (pyramids, hip roofs, barrel vaults, skylites, sunrooms and solariums, domes, gables, knee walls, atriums), door systems (patio, sliding, garden, mirrored, shower, closet, revolving), window systems (casement, awnings, sliding, single-hung, double-hung, hopper, fixed), framing and related components, curtain walls, entranceways, storefronts, total vision systems, suspended glazing, smoke baffles, strip windows, punched openings, shadow form cladding, structural silicone glazing (SSG), clerestory glazing, office partitions, aquariums, balustrades, handrails, greenhouses, security glazing, fireproof glazing, hardware, flashing, membranes, adhesives, sealants, specialty glass, sealed units.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

4.01 **Lays out materials.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

4.01.01	knowledge of different types of glass materials and related components
4.01.02	knowledge of proper layout for cutting and shaping glass and materials
4.01.03	ability to lay out materials

Sub-task

4.02 Shapes glass.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

4.02.01	knowledge of different types of glass
4.02.02	knowledge of related tools and machinery
4.02.03	knowledge of the characteristics of glass
4.02.04	ability to perform straight cuts
4.02.05	ability to perform curved cuts
4.02.06	ability to cut glass from templates
4.02.07	ability to perform edge work on glass such as arrissed, bevelled, furniture, polished, mitred, and ground
4.02.08	ability to drill holes in glass
4.02.09	ability to notch glass
4.02.10	ability to grind finger pulls in glass
4.02.11	ability to use glass pliers
4.02.12	ability to use freehand techniques
4.02.13	ability to store shaped glass

Sub-task

4.03 Treats glass surfaces.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

4.03.01	knowledge of different types of surface treatments for glass materials
4.03.02	ability to etch glass using chemicals
4.03.03	ability to sandblast decal designs on glass

Supporting Knowledge & Abilities

4.03.04 ability to apply films to glass

4.03.05 ability to paint glass

Sub-task

4.04 Prepares support structures for vertical glazing.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

4.04.01 knowledge of different types of framing materials

4.04.02 knowledge of stock length materials

4.04.03 knowledge of prefabricated materials

4.04.04 ability to prepare support structures using steel and aluminium stock lengths

4.04.05 ability to cut framing materials

4.04.06 ability to prepare framing materials

4.04.07 ability to fabricate framing

Task 5 Uses and maintains equipment.

Related Components: Manuals, inspection schedules, safety equipment, warranty information, safety regulations, material safety data sheets (MSDS), permits, certification requirements.

Tools and Equipment: See Appendix "A": Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

5.01 Uses equipment.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

5.01.01 knowledge of equipment

Supporting Knowledge & Abilities

5.01.02	ability to select equipment to meet task requirements
5.01.03	ability to use equipment

Sub-task

5.02 Maintains equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

5.02.01	knowledge of preventive maintenance
5.02.02	knowledge of care and upkeep of equipment
5.02.03	ability to use maintenance manuals
5.02.04	ability to assess maintenance requirements
5.02.05	ability to perform minor maintenance and repairs

Task 6 Uses and maintains hand and power tools.

Related Components: Manuals, inspection schedules, safety equipment, warranty information, safety regulations, material safety data sheets (MSDS), permits, certification requirements.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Personal Protective Equipment.

Sub-task

6.01 Uses hand tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

6.01.01	knowledge of hand tools that are commonly used in the trade
6.01.02	ability to select appropriate tools
6.01.03	ability to use appropriate tools

Sub-task

6.02 Maintains hand tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

6.02.01	knowledge of preventative maintenance
6.02.02	knowledge of care and upkeep of hand tools
6.02.03	ability to perform minor maintenance and repairs

Sub-task

6.03 Uses power tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

6.03.01	knowledge of power tools that are commonly used in the trade
6.03.02	ability to select power supply sources
6.03.03	ability to select power tools
6.03.04	ability to use power tools

Sub-task

6.04 Maintains power tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

6.04.01	knowledge of preventative maintenance
6.04.02	knowledge of care and upkeep of power tools
6.04.03	ability to use manuals
6.04.04	ability to assess maintenance requirements
6.04.05	ability to perform minor maintenance and repairs

BLOCK B

COMMERCIAL DOOR AND WINDOW SYSTEMS

Trends: *Door and window systems are becoming larger and products are becoming heavier. Glazing techniques are becoming increasingly more complex due to special design features such as rain screens, vapour and air barriers, and fire and smoke barrier sealants. Improvements in the thermal capacity of modern glass and the demand for more vision results in larger modules that are heavier, which requires increased hoisting and rigging. Increased use of "global technology" requires a wider scope of knowledge. Consequently, glaziers need to be more frequently updated on advancing technologies. Increased use of structural silicone glazing (SSG). Increased use of preglazing. Advancements in window and door technology limit damage or injury due to climate variation, natural disasters (earthquake glazing, for example, is used in some jurisdictions), and other disasters.*

Task 7 **Fabricates structural systems.**

Related Components: Shop drawings, cutting sheets, material safety data sheets (MSDS), specifications, isolation coatings, route sheets, safety regulations, sloped-glazing systems (pyramids, hip roofs, barrel vaults, skylites, sunrooms and solariums, domes, gables, knee walls, atriums), door systems (patio, sliding, garden, mirrored, shower, closet, revolving, garage, automatic and all-glass), window systems (casement, awnings, sliding, single-hung, double-hung, hopper, fixed), framing and related components, curtain walls, entranceways, storefronts, total vision systems, suspended glazing, smoke baffles, strip windows, punched openings, shadow form cladding, structural silicone glazing (SSG), clerestory glazing, office partitions, aquariums, balustrades, handrails, greenhouses, security glazing, fireproof glazing, hardware, flashing, membranes, adhesives, sealants, specialty glass, sealed units, back-up and shear blocks, expansion sleeves, pressure plates, drainage holes.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

7.01 Fabricates curtain walls.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

7.01.01	knowledge of principles, performance, and construction of curtain walls, including conventional (stick), preglazed (unitized), and panel
7.01.02	knowledge of construction details to allow for expansion and contraction
7.01.03	ability to fabricate parts and components of curtain wall from stock length and prefabricated materials
7.01.04	ability to assemble curtain wall

Sub-task

7.02 Fabricates storefronts.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

7.02.01	knowledge of construction, performance, and assembly techniques for aluminium storefront and sliding door storefront systems
7.02.02	ability to fabricate parts and components for storefronts and sliding door storefronts
7.02.03	ability to assemble storefronts and sliding door storefronts

Sub-task

7.03 Fabricates window systems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

7.03.01	knowledge of construction and assembly techniques for window systems
7.03.02	ability to fabricate parts and components for window systems

Supporting Knowledge & Abilities

7.03.03 ability to assemble window systems

Sub-task

7.04 Fabricates entrances.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

7.04.01 knowledge of construction, system performance, and details for entrances

7.04.02 knowledge of requirements for barrier-free access to public buildings

7.04.03 knowledge of compatibility and performance of specified hardware for aluminium doors

7.04.04 ability to prepare structural members of entrances

7.04.05 ability to assemble entrances

Sub-task

7.05 Fabricates structures for sloped-glazing.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

7.05.01 knowledge of sloped-glazing construction techniques

7.05.02 knowledge of panel and grid systems

7.05.03 ability to fabricate framing structures for pyramids using stock length and prefabricated materials

7.05.04 ability to fabricate framing structures for all types of sloped-glazing using stock length materials

7.05.05 ability to fabricate framing structures for all types of sloped-glazing using prefabricated materials

Supporting Knowledge & Abilities

7.05.06	ability to fabricate parts and components of sloped glazed structures from stock length and prefabricated materials

Task 8 **Installs structural systems.**

Related Components: Shop drawings, cutting sheets, material safety data sheets (MSDS), specifications, isolation coatings, route sheets, safety regulations, sloped-glazing systems (pyramids, hip roofs, barrel vaults, skylites, sunrooms and solariums, domes, gables, knee walls, atriums), door systems (patio, sliding, garden, mirrored, shower, closet, revolving, garage, automatic and all-glass), window systems (casement, awnings, sliding, single-hung, double-hung, hopper, fixed), framing and related components, curtain walls, entranceways, storefronts, total vision systems, suspended glazing, smoke baffles, strip windows, punched openings, shadow form cladding, structural silicone glazing (SSG), clerestory glazing, office partitions, aquariums, balustrades, handrails, greenhouses, security glazing, fireproof glazing, hardware, flashing, membranes, adhesives, sealants, specialty glass, sealed units.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

8.01 **Lays out structural systems.** **Supporting Knowledge & Abilities**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	no	NV

8.01.01	knowledge of installation techniques and procedures
8.01.02	knowledge of grid and panel systems
8.01.03	ability to use specialty tools to lay out structural systems
8.01.04	ability to lay out and position framing in rough openings

Sub-task

8.02 Installs curtain wall systems. **Supporting Knowledge & Abilities**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

8.02.01	knowledge of installation requirements, techniques, and procedures
8.02.02	knowledge of fasteners
8.02.03	knowledge of adapters
8.02.04	knowledge of insulation requirements for similar and dissimilar materials
8.02.05	knowledge of locations of wind load and dead load anchors to floor slabs and spandrel beams
8.02.06	knowledge of expansion joints
8.02.07	ability to install curtain walls using grid and panel systems
8.02.08	ability to level, plumb, and align curtain walls
8.02.09	ability to secure metal back pans, glazing adapters, insulation, corner blocks, and glazing gaskets
8.02.10	ability to install spandrel adapters, spandrels, and pressure plates
8.02.11	ability to spot-weld anchors
8.02.12	ability to install snap covers, flashing, column covers, and fire stops
8.02.13	ability to apply sealants
8.02.14	ability to install air and vapour barriers

Sub-task

8.03 Installs storefront systems.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

8.03.01	knowledge of installation procedures and performance of aluminium storefronts
8.03.02	ability to install preassembled structures
8.03.03	ability to install stick-built structures

Sub-task

8.04 Installs window systems.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

8.04.01	knowledge of installation procedures and performance of window systems
8.04.02	ability to install preassembled structures
8.04.03	ability to install stick-built structures

Sub-task

8.05 Installs entrance systems.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

8.05.01	knowledge of installation procedures and performance of entrance systems
8.05.02	knowledge of hardware compatibility with aluminium doors
8.05.03	ability to install entrance framing
8.05.04	ability to install different types of doors

Sub-task

8.06 Installs structures for sloped-glazing systems.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

8.06.01	knowledge of sloped-glazing systems and performance
8.06.02	ability to install self-supporting sloped-glazing system into structural opening using the panel system
8.06.03	ability to install self-supporting sloped-glazing system into structural opening using the grid systems

BLOCK C

RESIDENTIAL DOOR AND WINDOW SYSTEMS

Trends: *Increased use of composite materials for windows and doors. Increased use of preglazing and dry glazing systems. Increased use of retrofitting. Better materials are making windows and doors more energy efficient and maintenance-free.*

Task 9 **Installs doors.**

Related Components: Shop drawings, door systems (patio, sliding, garden, mirrored, shower, closet, garage, automatic and all-glass), framing and related components, hardware, glass units, specialty glass, locks, latches, hinges, closers, weather stripping, cylinders, handles, sweeps, door holders, flashings, membranes, adhesives, sealants.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

9.01 Lays out door location.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

9.01.01 knowledge of door types

9.01.02 ability to remove existing doors

9.01.03 ability to determine door swing and location

9.01.04 ability to verify dimension of rough opening

9.01.05 ability to correlate drawing dimensions with site dimensions

Sub-task

9.02 Assembles frames.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

9.02.01 knowledge of frame construction and components

Supporting Knowledge & Abilities

9.02.02 knowledge of assembly procedures

9.02.03 ability to assemble parts and components

9.02.04 ability to assemble different types of frames

Sub-task

9.03 Installs hardware.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

9.03.01 knowledge of hardware installation procedures

9.03.02 knowledge of fastening systems

9.03.03 ability to verify hardware

9.03.04 ability to determine hardware location

9.03.05 ability to install hardware

9.03.06 ability to select proper tools

Sub-task

9.04 Assembles doors.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

9.04.01 knowledge of door types and components

9.04.02 knowledge of assembly procedures

9.04.03 ability to verify components and dimensions

9.04.04 ability to assemble parts and components

9.04.05 ability to assemble different types of doors

Sub-task

9.05 Sets doors and frames. **Supporting Knowledge & Abilities**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

9.05.01	knowledge of sealants and insulation
9.05.02	knowledge of installation procedures
9.05.03	ability to level and plumb doors and frames
9.05.04	ability to install different types of doors
9.05.05	ability to make final adjustments to hardware
9.05.06	ability to install insulation and vapour barriers

Task 10 Installs windows.

Related Components: Window systems (casement, awnings, sliding, single-hung, double-hung, hopper, fixed), hardware, flashings, membranes, adhesives, sealants, sash and frame components, glass units, specialty glass.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

10.01 Lays out window walls. **Supporting Knowledge & Abilities**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

10.01.01	knowledge of window types
10.01.02	knowledge of hardware
10.01.03	ability to remove existing windows
10.01.04	ability to determine window location
10.01.05	ability to verify dimensions of rough opening
10.01.06	ability to correlate drawing dimensions with site dimensions

Sub-task

10.02 Sets windows in openings.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

10.02.01	knowledge of installation procedures
10.02.02	knowledge of sealants and insulation
10.02.03	ability to level and plumb windows and frames
10.02.04	ability to install flashing and membranes

Sub-task

10.03 Installs hardware.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

10.03.01	knowledge of different types of hardware
10.03.02	knowledge of fastening systems
10.03.03	ability to verify hardware
10.03.04	ability to determine hardware location
10.03.05	ability to determine procedures for installing hardware

Sub-task

10.04 Glazes windows.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

10.04.01	knowledge of installation procedures
10.04.02	knowledge of sealants, adhesives, and gaskets and their compatibility to sealed units
10.04.03	knowledge of allowable tolerances
10.04.04	ability to verify materials

Supporting Knowledge & Abilities

10.04.05	ability to secure stops
10.04.06	ability to apply sealants and adhesives
10.04.07	ability to apply edge blocking where required

BLOCK D

SERVICE

Trends: *Increased use of glass and related components in buildings results in increased demand for service work. Increased demand for retrofitting closers to electrically operated systems. Increased use of security systems such as magnetic locks, electric strikes, card readers, and window films. Increased use of energy-efficient glass and related products. Increased use of imported hardware and other materials. The globalization of our economic systems facilitates the increased transfer of trade technology, materials, and other products across the nation. Consequently, glaziers need a wider scope of knowledge about and must be more frequently updated on advancing technologies.*

Task 11 **Services commercial door systems, window systems, and specialty products.**

Related Components: Sloped-glazing systems (pyramids, hip roofs, barrel vaults, skylites, sunrooms and solariums, domes, gables, knee walls, atriums), door systems (patio, sliding, garden, mirrored, shower, closet, revolving, garage, automatic, all-glass), window systems (casement, awnings, sliding, single-hung, double-hung, hopper, fixed), framing and related components, curtain walls, entranceways, storefronts, total vision systems, suspended glazing, smoke baffles, strip windows, punched openings, shadow form cladding, structural silicone glazing (SSG), clerestory glazing, office partitions, aquariums, balustrades, handrails, greenhouses, security glazing, fireproof glazing, hardware, flashing, membranes, adhesives, sealants, specialty glass and films, sealed units.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

11.01 **Assesses service requirements.**

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

11.01.01 knowledge of different types of window and door systems

11.01.02 knowledge of hardware types

11.01.03 knowledge of specialty products

11.01.04 ability to identify and solve problems

Supporting Knowledge & Abilities

11.01.05	ability to communicate problems to clients and propose solutions.

Sub-task

11.02 Assembles parts and materials.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

11.02.01	knowledge of material sources
11.02.02	ability to identify required materials
11.02.03	ability to organize parts and materials
11.02.04	ability to transport parts and materials

Sub-task

11.03 Repairs.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

11.03.01	knowledge of safe practices for handling broken glass and materials
11.03.02	knowledge of safe practices for disposal of broken glass and materials
11.03.03	knowledge of hoarding techniques
11.03.04	knowledge of different glazing systems
11.03.05	knowledge of hardware
11.03.06	ability to remove glass and materials in a safe manner
11.03.07	ability to secure premises until permanent repairs can be completed
11.03.08	ability to plan rigging, hoisting and scaffolding
11.03.09	ability to install barriers and hoarding

Supporting Knowledge & Abilities

11.03.10	ability to protect adjacent structures during service work
11.03.11	ability to install replacement glass and materials
11.03.12	ability to replace worn or faulty mechanisms
11.03.13	ability to replace worn or faulty parts and components
11.03.14	ability to replace worn or faulty hardware
11.03.15	ability to re-adjust supporting structures
11.03.16	ability to remove and replace sealants
11.03.17	ability to adjust hardware
11.03.18	ability to service specialty products

Task 12 **Services residential door systems, window systems, and specialty products.**

Related Components: Sloped-glazing systems (pyramids, hip roofs, barrel vaults, skylites, sunrooms and solariums, domes, gables, knee walls, atriums), door systems (patio, sliding, garden, mirrored, shower, closet, revolving, garage, automatic, all-glass), window systems (casement, awnings, sliding, single-hung, double-hung, hopper, fixed), framing and related components, curtain walls, entranceways, storefronts, total vision systems, suspended glazing, smoke baffles, strip windows, punched openings, shadow form cladding, structural silicone glazing (SSG), clerestory glazing, residential and office partitions, aquariums, balustrades, handrails, greenhouses, security glazing, fireproof glazing, hardware, flashing, membranes, adhesives, sealants, specialty glass and films, sealed units.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

12.01 Assesses service requirements.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

12.01.01	knowledge of different window and door systems
12.01.02	knowledge of hardware types
12.01.03	knowledge of specialty products
12.01.04	ability to identify and solve problems
12.01.05	ability to communicate problems to clients and propose solutions
12.01.06	ability to assess labour requirements
12.01.07	ability to assess the need for repairs, replacement, or hoarding

Sub-task

12.02 Assembles parts and materials.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

12.02.01	knowledge of material sources
12.02.02	ability to plan the assembly of parts and materials
12.02.03	ability to transport parts and materials

Sub-task

12.03 Repairs.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

12.03.01	knowledge of safe practices for handling broken glass and materials

Supporting Knowledge & Abilities

12.03.02	knowledge of safe practices for disposal of broken glass and materials
12.03.03	knowledge of hoarding techniques
12.03.04	knowledge of different glazing systems
12.03.05	ability to remove glass and materials in a safe manner
12.03.06	ability to secure premises until permanent repairs can be completed
12.03.07	ability to install barriers
12.03.08	ability to protect adjacent structures
12.03.09	ability to install replacement glass and materials

BLOCK E

SPECIALTY PRODUCTS

Trends: *Increased demand and use of specialty products require glaziers to have additional knowledge, skills, and abilities to install them. Increased use of laminated glass, heat-strengthened glass, total vision systems, suspended glazing, decorative glass, multi-coloured laminated glass, and window films. Increased use of glass as a solar-controlled product. Additional knowledge and skills are required to install curved glass. Because of constant technological developments in automotive glass (for example, integration of windshields into the very structure of a vehicle, use of window-in-windows, and advancements in airbag technology), glaziers need to upgrade their technical knowledge more often. Specialty tools are necessary to install and remove automotive glass. There is a trend toward repairing windshields rather than replacing them. Advancement of adhesive technology allows for increased use of glass in non-traditional applications. There is also increased demand for larger automotive glass.*

Task 13 **Installs specialty products.**

Related Components: Curved glass, multi-coloured glass, multi-layered laminated glass, decorative glass, patterned glass, leaded lites, crystal, fire-proof glass, total vision systems, suspended systems, reflective glass, mirrors, sandblasting, security films, sport boards, glass balustrades, showcases, shower doors, tub enclosures, aquariums, furniture, electronically altered glass, X-ray glass, heat-resistant ceramics, wired glass, UV-glass, tempered glass, sunrooms and solariums, sealants, adhesives, flashings, grouts, glass stabilizers, smoke baffles, sprinkler baffles, glass floors.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Machines and Equipment, Personal Protective Equipment.

Sub-task

13.01 Installs specialty glass.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

13.01.01 knowledge of the characteristics and properties of specialty glass

13.01.02 knowledge of different types of specialty glass

13.01.03 knowledge of the applications of specialty glass

Supporting Knowledge & Abilities

13.01.04	knowledge of procedures for installing specialty glass products
13.01.05	ability to remove existing specialty glass products
13.01.06	ability to install specialty glazing
13.01.07	ability to plan the installation of specialty products
13.01.08	ability to level and plumb components
13.01.09	ability to install hardware
13.01.10	ability to apply sealant to joints
13.01.11	ability to install anchors

Sub-task

13.02 Installs glass enclosures.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

13.02.01	knowledge of installation procedures for glass used for sporting purposes
13.02.02	knowledge of installation procedures for glass used in bathtub and shower enclosures
13.02.03	ability to remove existing glass enclosures
13.02.04	ability to install glass used for sporting purposes
13.02.05	ability to install glass used in bathtub and shower enclosures

Sub-task

13.03 Installs specialty components and systems.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	yes	yes	NV	yes	yes	yes	yes	yes	NV

13.03.01	knowledge of installation procedures for specialty components and systems

Supporting Knowledge & Abilities

13.03.02 ability to remove existing specialty components and systems

13.03.03 ability to prepare specialty components and systems for installation

Task 14 Installs automotive glass.

Related Components: Window-in-window, sunroofs, hardware, films, windshields, sidelites, backlites, quarter glass, vent glass, UV resin, urethane, primers, cleaners, laminated safety glass.

Tools and Equipment: See Appendix "A": Hand Tools, Power Tools, Specialty Tools, Personal Protective Equipment.

Sub-task

14.01 Installs windshields.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	no	yes	NV	yes	yes	yes	yes	yes	NV

14.01.01 knowledge of installation procedures for windshields

14.01.02 knowledge of adhesives

14.01.03 ability to remove damaged windshields

14.01.04 ability to read and interpret catalogue for proper windshield selection

14.01.05 ability to follow manufacturers' instructions

14.01.06 ability to perform air and water tests

Sub-task

14.02 Installs backlites.

Supporting Knowledge & Abilities

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	no	yes	NV	yes	yes	yes	yes	yes	NV

14.02.01 knowledge of installation procedures for backlites

Supporting Knowledge & Abilities

14.02.02	knowledge of adhesives
14.02.03	ability to remove damaged backlites
14.02.04	ability to read and interpret catalogue for proper backlite selection
14.02.05	ability to follow manufacturers' instructions
14.02.06	ability to perform air and water tests

Sub-task

14.03 Installs sidelites.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	no	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

14.03.01	knowledge of installation procedures for sidelites
14.03.02	knowledge of adhesives
14.03.03	ability to remove damaged sidelites
14.03.04	ability to read and interpret catalogue for proper sidelite selection
14.03.05	ability to follow manufacturers' instructions

Sub-task

14.04 Installs custom lites.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	no	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

14.04.01	knowledge of installation procedures for laminated safety glass and sunroofs
14.04.02	ability to fabricate laminated safety glass
14.04.03	ability to install laminated safety glass
14.04.04	ability to install sunroofs

Sub-task

14.05 Repairs windshields.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU
NV	yes	yes	NV	no	yes	NV	yes	yes	yes	yes	yes	NV

Supporting Knowledge & Abilities

14.05.01	knowledge of auto glass repair systems
14.05.02	ability to examine windshields to determine the need for repair or replacement
14.05.03	ability to set up resin injection equipment
14.05.04	ability to follow manufacturers' instructions
14.05.05	ability to repair windshields

APPENDICES

TOOLS AND EQUIPMENT

Hand Tools

Allen keys
caulking gun
C-clamp
centre punch
chalk line
chisel – cold
chisel – wood
construction line
countersinks
dead-blow hammer
drill bits – high speed steel
files – bastard
files – half moon
files – round
glass cutter
glazing bar
hacksaw
hammer – claw
hammer – rubber or plastic
level
locking pliers
locking pliers – duck-billed
mallet – rubber
measuring tape
nail set
nut driver set (imperial and metric)
open end wrenches (imperial and metric)
paint brush
pliers – glass
pliers – standard
plumb bob
protractor
putty knife – bent, straight
ratchet set
rivet tool
scoring tool
screwdrivers – flat
screwdrivers – Philips
screwdrivers – Robertson
scribe
side cutters
sliding bevel
spanner or wrench – adjustable
squares – combination
squares – steel
tin snips – regular
tool box – with lock
utility knife
vinyl glazing roller

Power Tools

drill – electric
drill – hammer
drill – cordless
drill – portable hand
glass drilling machine
grinders
nibbler – air
nibbler – electric
portable belt machine
power metal shears (nibblers)
router – electric
saw – cutoff
saw – jig
saw – metal cutoff
saw – portable glass notching
saw – portable mitre
saw – reciprocating
saw – sabre
screw-gun

Specialty Tools

channel and vent tool
channel chisel
door handle release tool
door panel pry bar
fibre stick
glass clamp
hook tool – offset
Johnson bar
lace tool
level – laser
level – builder's
moulding release tool
plate running pliers
point driver
powder-actuated tools
retaining nut removal tool
rubber insert tool
Russell windshield knife (banana knife)
self-locking rubber tool
suction cups – powered
suction cups – standard
suction cups – windshield
theodolite
torque wrench
transit
tripod glass drill
windshield knives – hot and cold
windshield wiper removal tool

Machines and Equipment

argon gas pressure system
automatic bevelling machine
automatic cutting table
automatic diamond wheel edger
automatic glass washing machine
automatic vertical edging machine
bench grinder
benders
bulk sealing applicator
copy-router
crane
crane – overhead
drill press
electric punches
finger pull machine
forklift
glass cutting table
glass dolly
glass racks
glass rougher
lifting tackles
metal cutting shears
milling machine (aluminium)
plate glass lifter
polishing machine
pony clamp
portable hydraulic case lifter
router – air
sandblaster
saw – notching
saw – radial arm
saw – table
saw horses
scaffoldings
sealed unit press
self-propelled elevated work platform
spot welding equipment
swing stage and bosun's chair (suspended scaffolds)
trucks (glass)
upright belt machine
vacuum cleaner – shop type

Personal Protective Equipment

aprons
chaps
ear protection
fall protection
gauntlets
gloves
handpads – rubber
hard hats
knee pads
respirators
safety footwear
safety glasses
safety vests

GLOSSARY

adhesive	substance used to adhere one material to another.
anchor	bracket made of aluminium or steel and used to fasten aluminium frames to an adjoining structure.
arrised	type of edge work, where the edge of the glass is ground back approximately 1/16th of an inch at an angle.
awning window	window that is hinged at the top and swings out.
backlite	back window of a vehicle.
bevelled	type of edge work, where the edge of the glass is ground back from 1/2 to 1 inch at an angle.
cap	outside finish of a curtain wall frame. Also called a "snap cover".
curtain wall	non-load-bearing wall constructed of aluminium and glass.
edge work	process of sanding or grinding the cut edge of a glass to any of the following finishes: arrised, bevelled, furniture, polished, mitred, and ground.
electronically altered glass	specialty glass that can be electronically obscured.
etching	creating designs and patterns on glass surfaces using acids.
fabricate	construct support structures using aluminium extrusions.
flashing	thin sheet of metal, formed to a specific shape.
gasket	preformed rubber or vinyl substance used in the glazing industry.
glaze	install glass.
hang (set) a door	install a door into a door frame.
laminated glass	glass that has been layered (laminated) at the factory with polyvinyl butyral between the layers.
lite	single piece of glass.
moulding	metal trim that covers windshield clips.

MSDS	Material Safety Data Sheets, as described in WHMIS legislation. See WHMIS.
plumb	*adjective:* perpendicular to level. *verb:* install something perpendicular to level.
polished	type of edge work, where glass is ground back to its natural state.
prefabricated	preassembled component.
preglazed	window frame that has the glass installed in it before installation of the frame takes place.
pressure plate	screw-applied stop on curtain wall.
rough opening	opening into which a window or door frame is installed (wood, brick, steel).
rubber pads	pieces of rubber used for carrying glass.
sandblasting	carving glass surfaces using sandblasting equipment.
sash	frame holding the glass in a window and usually made to slide up and down in the grooves of a window aperture.
sealant	substance applied to a surface to make it impervious or resistant to water, dirt, stains, etc.
set (hang) a door	install a door into a door frame.
setting block	block made of rubber, neoprene, EPDM, or silicone and used to position and protect glass in a frame.
shear block	bracket made of aluminium or steel and used to fasten horizontal frame members to vertical frame members.
skylite	any overhead glazing.
snap cover	outside finish of a curtain wall frame. Also called a "cap".
spandrel	non-vision window.
specifications	written details of job descriptions.
stock length	standard size length of an aluminium extrusion.
stop	removable piece of material that holds glass in place (metal, wood, rubber).

storefront	glass and aluminium enclosure on the main part of a building, complete with doors.
suction cups	manual or power-assisted devices that lift glass using a vacuum.
tape	preformed glazing tape.
tempered	glass that has been heat-treated in order to strengthen its breaking tolerance.
WHMIS	Workplace Hazardous Material Information System.

BLOCKS AND TASKS WEIGHTING

BLOCK A COMMON OCCUPATIONAL SKILLS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	NV	18	30	NV	35	20	NV	35	20	30	23	20	NV	26%

Task 1 Plans work activities.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	10	20	NV	25	20	NV	18	15	25	24	30	NV	21%

Task 2 Prepares site for installation.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	8	20	NV	25	16	NV	18	10	25	12	10	NV	16%

Task 3 Handles glass and other materials.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	40	20	NV	15	20	NV	18	25	20	24	15	NV	22%

Task 4 Prepares materials for installation.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	32	20	NV	25	22	NV	18	20	20	12	25	NV	21%

Task 5 Uses and maintains equipment.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	5	10	NV	5	12	NV	18	10	5	12	10	NV	10%

Task 6 Uses and maintains hand and power tools.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	5	10	NV	5	10	NV	10	20	5	16	10	NV	10%

BLOCK B COMMERCIAL DOOR AND WINDOW SYSTEMS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	NV	27	25	NV	30	40	NV	35	40	40	19	30	NV	32%

Task 7 Fabricates structural systems.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	40	50	NV	25	30	NV	40	40	30	50	40	NV	38%

Task 8 Installs structural systems.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	60	50	NV	75	70	NV	60	60	70	50	60	NV	62%

BLOCK C RESIDENTIAL DOOR AND WINDOW SYSTEMS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	NV	10	25	NV	5	12	NV	5	10	15	19	15	NV	13%

Task 9 Installs doors.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	50	50	NV	50	40	NV	50	40	40	50	50	NV	47%

Task 10 Installs windows.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	50	50	NV	50	60	NV	50	60	60	50	50	NV	53%

BLOCK D SERVICE

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	NV	35	15	NV	15	18	NV	15	20	10	23	25	NV	19%

Task 11 Services commercial door systems, window systems, and specialty products.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	70	50	NV	65	85	NV	75	70	80	50	65	NV	68%

Task 12 Services residential door systems, window systems, and specialty products.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	30	50	NV	35	15	NV	25	30	20	50	35	NV	32%

BLOCK E SPECIALTY PRODUCTS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	National Average
%	NV	10	5	NV	15	10	NV	10	10	5	16	10	NV	10%

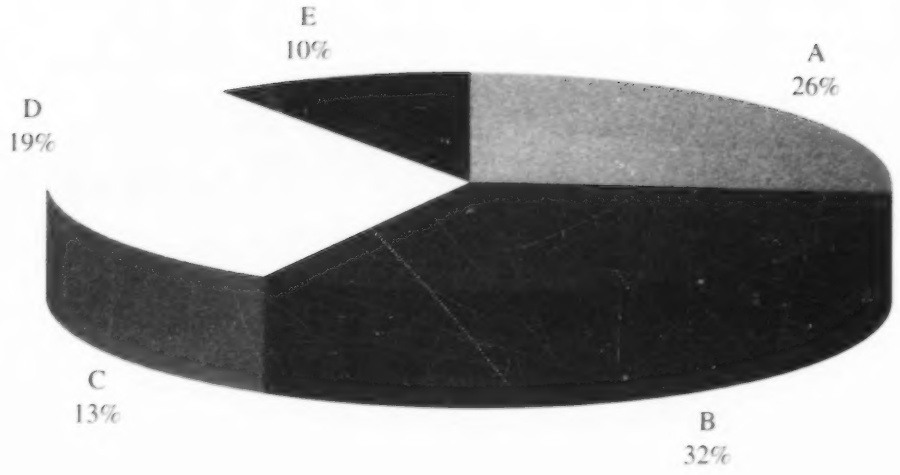
Task 13 Installs specialty products.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	35	75	NV	100	60	NV	25	25	95	50	40	NV	56%

Task 14 Installs automotive glass.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	NU	
%	NV	65	25	NV	0	40	NV	75	75	5	50	60	NV	44%

PIE CHART*
Glazier

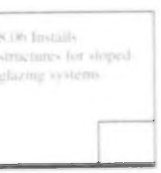


TITLES OF BLOCKS

Block A	Common Occupational Skills	Block D	Service
Block B	Commercial Door and Window Systems	Block E	Specialty Products
Block C	Residential Door and Window Systems		

* Average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input of workers within the occupation from all areas of Canada. Interprovincial examinations typically have from to 100 and 150 multiple-choice questions on each examination.

BLOCKS	TASKS	SUB-TASKS				
Common Occupational Skills	1. Plans work activities.	1.01 Interprets drawings and specifications.	1.02 Conducts site assessment.	1.03 Prepares list of materials.	1.04 Schedules equipment and materials.	1.05 Plans work process.
	2. Prepares site for installation.	2.01 Makes provision for the storage of materials, tools, and equipment.	2.02 Installs scaffolding equipment.	2.03 Installs rigging equipment.	2.04 Installs hoisting equipment.	2.05 Installs mechanical lifts and work platforms.
	3. Handles glass and other materials.	3.01 Transports glass and other materials.	3.02 Receives glass and other materials.	3.03 Rigs and hoists glass and other materials.	3.04 Stores glass and other materials.	3.05 Installs glass and other materials.
	4. Prepares materials for installation.	4.01 Lays out materials.	4.02 Shapes glass.	4.03 Treats glass surfaces.	4.04 Prepares support structures for vertical glazing.	
	5. Uses and maintains equipment.	5.01 Uses equipment.	5.02 Maintains equipment.			
	6. Uses and maintains hand and power tools.	6.01 Uses hand tools.	6.02 Maintains hand tools.	6.03 Uses power tools.	6.04 Maintains power tools.	
Commercial Door and Window Systems	7. Fabricates structural systems.	7.01 Fabricates curtain walls.	7.02 Fabricates storefronts.	7.03 Fabricates window systems.	7.04 Fabricates entrances.	7.05 Fabricates structures for sloped glazing.
	8. Installs structural systems.	8.01 Lays out structural systems.	8.02 Installs curtain wall systems.	8.03 Installs storefront systems.	8.04 Installs window systems.	8.05 Installs entrance systems.


8.06 Installs
structures for sloped
glazing systems

BLOCKS
TASKS
SUB-TASKS
C
Residential Door and Window Systems
9. Installs doors
9.01 Lays out door location
9.02 Assembles frames
9.03 Installs hardware
9.04 Assembles doors
9.05 Sets doors and frames
10. Installs windows
10.01 Lays out window walls
10.02 Sets windows in openings
10.03 Installs hardware
10.04 Glazes windows
D
Service
11. Services commercial door systems, window systems, and specialty products
11.01 Assesses service requirements
11.02 Assembles parts and materials
11.03 Repairs
12. Services residential door systems, window systems, and specialty products
12.01 Assesses service requirements
12.02 Assembles parts and materials
12.03 Repairs
E
Specialty Products
13. Installs specialty products
13.01 Installs specialty glass
13.02 Installs glass enclosures
13.03 Installs specialty systems/units and systems
14. Installs curtainwall glass
14.01 Installs windwalls
14.02 Installs backlites
14.03 Installs skylites
14.04 Installs curtain cages
14.05 Repairs windwalls